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EXAMINER	
ZHOU, SHUBO	

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1631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/081,834	PARIDA, LAXMI P.	
	Examiner	Art Unit	
	SHUBO (Joe) ZHOU	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2 and 4-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2 and 4-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/11/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's amendment and request for reconsideration filed 11/11/08 are acknowledged and the amendment has been entered.

Claims 2 and 4-17 are presently pending and under consideration.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 2 and 4-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Note that this rejection is newly applied in view of recent court decisions such as In re Bilski.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are drawn to a method or an article for performing the method, for pattern discovery on an input sequence comprising a plurality of elements, such as in claim 4, the method comprising:

determining a plurality of first motifs from the input sequence, each first motif comprising at least one element from the input sequence;

concatenating each of the plurality of first motifs with another of the plurality of first motifs to create a plurality of concatenated motifs;

removing one or more selected motifs, wherein said one or more selected motifs are any of the concatenated motifs and the first motifs, wherein the step of removing comprises removing suffix motifs and wherein each motif in the concatenated motifs and the first motifs has an associated location list, and wherein the step of removing suffix motifs comprises the steps of:

offsetting each location list for each of the motifs in the concatenated motifs and the first motifs to zero;

checking each location list for each of the motifs in the concatenated motifs and the first motifs to determine location lists that are the same;

concatenating motifs that have the same location list to create at least one new motif; and

providing at least said at least one new motif as an output to a user, wherein said method is performed by a processor.

The following analyses follow the rationales suggested in the Office's guidance to examiners under the Memorandum "Guidance for Examining Process Claims in View of In re Bilski (signed January 7, 2009, available online at www.uspto.gov/web/patents/memorandum.htm) and the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (OG Notices: 22 November 2005, also available from the US PTO website at http://www.uspto.gov/web/offices/com/sol/og/2005/week47/og200547.htm), which is incorporated in the MPEP 2106.IV.C.2.

Paragraph three of the Memorandum states:

"[A] method claim must meet a specialized, limited meaning to qualify as a patent-eligible process claim. As clarified in Bilski, the test for a method is whether the claimed method is (1) tied to a particular machine or apparatus, or (2) transforms a particular article to a different state or thing.

In the instant case, the method is not tied to a particular apparatus or machine. Note that while the claims require the method be performed by a processor, the processor does not have to be a particular apparatus or machine. Therefore, at least one embodiment of the claimed invention is not tied to a particular apparatus or machine.

Furthermore, there is no physical transformation because a process of sequence motif manipulation does not transform an article or physical subject to a different state or thing. Therefore, at least one embodiment of the claimed method is not a statutory process.

Additionally, the Guidelines, which is incorporated into the MPEP 2106.IV.C.2, states:

> *To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways (Guidelines, p. 19):*
>
> *- The claimed invention "transforms" an article or physical object to a different state or thing.*
>
> *- The claimed invention otherwise produces a useful, concrete and tangible result.*

It appears that the method claims produce a useful, concrete and tangible result.

With regard to claim 17, applicant argued that the claim is amended to recite a computer readable storage medium and thus does not include carrier wave. This is not found persuasive. It is known that signal comprising instructions can be embodied in

carrier wave. For example, Iyer et al. (US 20080294613 A1) describe "a signal embodied in a carrier wave including instructions for obtaining an operation to be performed on a data set and corresponding input data …." See at least paragraphs [0014-0015]. The instructions being embodied in the carrier wave is interpreted as being stored in the carrier wave.

Claim Rejections - 35 USC § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2 and 4-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The claims, e.g. claim 4, are amended to recite "providing at least said at least one new motif as an output to a user, wherein said method is performed by a processor." While the specification discloses that the method can be performed by a processor, e.g. on page 24, it does not adequately describe "providing at least said at least one new motif as an output to a user." Applicant pointed out support for the limitation to page 24, lines 17-18 of the specification and claim 16 of the original disclosure. A review of these sections indicates that again, it only describes the method can be performed by a

processor, but does not provide adequate support for "providing at least said at least one new motif as an output to a user."

Applicant's arguments filed 11/11/08 have been fully considered but they are not persuasive. Applicant first argues that the outputting to an user is an inherent step of the claimed method. See page 8 of the response. This is not found persuasive because the claimed method of manipulating sequence motif does not have to include an outputting step to be performed by a processor, which does not have to be a machine. Applicant also argues that the examiner asserts that it would be obvious to one skilled in the art that the new motif generated by the algorithm is displayed or outputted to whoever uses the program. Also see page 8 of the response. This is also unpersuasive because being obvious is not being inherent, and even a particular step of a method might be obvious over prior art, it still needs to be adequately described in the disclosure to meet the written description requirement.

Claim Rejections - 35 USC § 112, Second Paragraph

The rejection of Claims 2 and 4-17 under 35 U.S.C. 112, second paragraph, in the previous Office action has been withdrawn in view of applicant's amendment filed 11/11/08.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2 and 4-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parida et al. (IDS document: Pattern Discovery on Character Sets and Real-valued Data: Linear Bound on Irredundant Motifs and an Efficient Polynomial Time Algorithm, presentation on The Eleventh ACM-SIAM Symposium on Discrete Algorithms (SODA), held on January 9-11, 2000. See "SODA 2000 program," printed from the internet at <http://www.siam.org/meetings/da00/> on 7/7/08.).

The claims are drawn to a method and system for pattern discovery in an input sequence comprising determining a plurality of first motifs, concatenating each with another of the first motifs, removing selected motifs from the concatenated motifs and first motifs, offsetting each location list to zero, checking each location list to determine location lists that are the same, augmenting motifs that have the same location lists to create new motifs, and providing the new motifs to a user.

Parida et al. disclose a method and system for pattern discovery. The method comprises determining a plurality of first motifs referred to as irredundant motifs,

concatenating each with another of the first motifs and determining location list of the motifs. Parida et al. also disclose a time algorithm to detect motifs. The algorithm is based on first detecting motifs or substrings of motifs, and then two agreeing motifs are concatenated to obtain a larger motif. A the end of each iteration, the set of budding motifs are trimmed so that they so not grow exponentially. This trimming step is interpreted being the same as the removing step of the instant claims. See at least page 298, and the mathematical basis is presented on pages 299-301. The method also comprises that when two motifs are found to have the same location list, they "must straddle." See page 301. The algorithm to detect and concatenate motifs is presented on pages 303-304.

Parida et al. do not explicitly state that the generated new motifs are outputted to a user.

However, given that the method disclosed by Parida et al. is a computer implemented method using algorithm, it would have been obvious to one of ordinary skill in the art at the time of the invention that the new motif generated by the algorithm is caused to be displayed or outputted to whoever uses the program, i.e. the user.

Applicant's arguments have been fully considered but they are not persuasive. Applicant argues that the cited paper does not disclose or suggest the concatenation steps recited in the independent claims, and the algorithm. This is not found persuasive because Parida et al. explicitly recite algorithm the detect motifs and concatenate them to obtain a larger motif. See at least page 298, the second paragraph.

Claim Objections

Claim 2 is objected to because it is not dependent from a preceding claim but rather a following claim.

In the response filed 11/11/08, applicant cites 37 CFR 1.126 and argues that the original numbering of the claims must be preserved throughout the prosecution and when claims are canceled, the remaining claims must not be renumbered. This is not found persuasive because the Office is not asking applicant to renumber an originally filed claim. However, it should be pointed out that should the claims be found allowable, claims would be renumbered.

Examiner's special note

Applicant is thanked for the courtesy of providing a copy, as requested by the examiner, of the publication by Parida et al.: An approximation algorithm for alignment of multiple sequences using motif discovery, Journal of Combinatorial Optimization, 1999.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shubo (Joe) Zhou, whose telephone number is 571-272-0724. The examiner can normally be reached Monday-Friday from 8 A.M. to 4 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran, can be reached on 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Shubo (Joe) Zhou/

SHUBO (JOE) ZHOU, PH.D.

PRIMARY EXAMINER

571-272-0724